

CLAIMS

1. A device for quick closing of an electric high-voltage circuit, said device comprising a main spark gap, provided
5 with a first (2) and a second (3) main electrode, and a triggering device (10), said triggering device (10) comprising an auxiliary electrode gap (4) provided with a first (5) and a second (6) auxiliary electrode and being adapted, where necessary, to generate an arc (a) in the auxiliary
10 spark gap (4) for igniting an arc (A) in the main spark gap (1), **characterized** in that
- each auxiliary electrode (5, 6) is provided with a guide rail (13, 14) designed such that the arc (a), via the guide rails (13, 14) and under the influence of the generated
15 inherent magnetic field, moves into the main spark gap (1), said two guide rails (13, 14) each having a length that is larger than the width of the auxiliary spark gap (a),
 - the auxiliary electrodes (5, 6) are adapted so as to be protected from the effect of plasma formed in the main spark
20 gap (1),
 - a hermetic enclosure (21) encloses the main spark gap (1) and the auxiliary spark gap (4).
2. A device according to claim 1, **characterized** in that the
25 guide rails (13, 14) are substantially parallel and directed towards said first main electrode and have a length that is several times larger than the width of the auxiliary spark gap (4).
- 30 3. A device according to claim 1 or 2, **characterized** in that the auxiliary electrodes (5, 6) are protected from the effect of the plasma in the main spark gap (1) by being arranged in a protected position relative to the main spark gap (1).
- 35 4. A device according to claim 3, **characterized** in that the auxiliary spark gap (4) is arranged adjacent to said second main electrode (3) and located some distance away from the

main spark gap (1) as viewed in the direction of the main spark gap.

5 5. A device according to any of claims 1-4, **characterized** in that a shielding device (15) is arranged between the guide rails (13, 14) and the main spark gap (1).

6. A device according to claim 5, **characterized** in that the shielding device (15) is provided with an opening (16).

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7. A device according to any of claims 1-6, **characterized** in that the main spark gap (1) is designed for a movable arcing path via the inherent magnetic field.

15 8. A device according to claim 7, **characterized** in that the each main electrode (2, 3) is annular.

20 9. A device according to any of claims 1-8, **characterized** in that one of the guide rails (13, 14) of the triggering device is at the same potential as said second main electrode (3) of the main spark gap.

25 10. A device according to any of claims 1-9, **characterized** in that it comprises a mechanical contact device (25) connected in parallel with the main spark gap (1).

11. A device according to claim 10, **characterized** in that a hermetic enclosure (26) encloses the mechanical contact device (25).

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12. A device according to any of claims 1-11, **characterized** in that each enclosure (21, 26) encloses a gaseous medium under overpressure.

35 13. A device according to any of claims 1-10, **characterized** in that an electric drive circuit (7) is adapted to generate the arc (a) in the auxiliary spark gap (4), in which drive circuit a primary coil (29) for operating the mechanical contact device (25) is connected in series.

14. A device according to any of claims 1-13, **characterized** in that it is designed as a high-voltage protective device for an electric system and that the triggering device is adapted to be supplied with energy direct from the fault
5 current of the line.

15. A device according to any of claims 1-13, **characterized** in that the triggering device is adapted to be supplied with energy from an energy magazine, which in turn is supplied
10 with energy from the line during normal operation thereof.

16. A device according to any of claims 1-13, **characterized** in that the triggering device is adapted to be supplied with energy from a source of energy that is independent of the
15 line.

17. A method for quickly closing an electric high-voltage circuit by generating an arc between a first and a second main electrode of a main spark gap with the aid of a triggering device, wherein, where necessary, an arc is generated
20 between a first and a second auxiliary electrode in an auxiliary spark gap associated with the triggering device, whereby an arc in the main spark gap is ignited with the aid of the arc in the auxiliary spark gap, **characterized** in
25 that,

- the arc in the auxiliary spark gap, via guide rails and under the influence of inherent magnetic fields, is brought to move into the main spark gap,
- the auxiliary electrodes are protected from the effect of
30 plasma formed in the main spark gap, and that
- the main spark gap and the auxiliary spark gap are enclosed in a hermetic enclosure.

18. A method according to claim 17, **characterized** in that
35 the method is carried out while utilizing a device according to any of claims 1-16.

19. Use of a device according to claims 1-16 for quickly closing an electric high-voltage circuit.

20. Use according to claim 19 as overvoltage protection device for a series capacitor.

21. An overvoltage protection device for a series capacitor, **characterized** in that the overvoltage protection device comprises a device according to any of claims 1-16.

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